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DERWENT-WEEK: 199702

TITLE: Mechanical reinforcement of jacketed optical fibre - including embedding wire within sheathing of end-emitting fibre

PATENT-ASSIGNEE: ANONYMOUS[ANON]

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PATENT-FAMILY:

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APPLICATION-DATA:

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ABSTRACTED-PUB-NO: RD **390016A**

BASIC-ABSTRACT:

End-emitting and side-emitting solid-core polymer optical fibres (POFs) have found use for illumination. Such fibres may be rigid or flexible in varying degrees. The construction of optical fibres may include a core, a cladding layer, and in some cases a sheathing layer. The cladding refers to the material immediately surrounding the core of the POF. The sheathing material may surround the cladding layer. It is possible to incorporate mechanical reinforcements into the cladding and/or sheathing layers, modifying the

physical properties of the polymer optical fibre. If wire is employed, the wiring can be used separately for conduction of electrical power and/or return signals, for such uses as internal sensors where one would use both the delivered light to check some observation and the electrical power to activate and/or record that observation. Examples of specific modifications include: (1) Embedding a wire within the sheathing of an end-emitting fibre, parallel to the axis o f light transmission. With care, a wire can be selected that will allow a highly flexible fibre to be posed in a fixed position with very little external support. (2) Embedding a spring within the sheathing of an end-emitting fibre with the axis of the spring parallel with the axis of light transmission. This may increase the resistance of the flexible fibre against kinking. It may also allow for ''sculptural'' effects. It may also allow a fibre to recover from any thermoset behaviour. (3) Embedding a wire or spring in the cladding of an end-transmitting fibre, with similar effects as reported in items 1 and 2. (4) Embedding a wire within the cladding or sheathing of a side-emitting fibre, with similar effects as reported in item 1. In the case, it may be beneficial to restrict the portion of the cladding which is used for side emission and to incorporate the wire in the portion of the cladding which is not used for side emission. (5) Embedding a spring within the cladding or sheathing of a side-emitting fibre, with similar effects as reported in item 2.
In this case, the physical effects must be balanced against the desired optical effects. It may be desirable to use a spring with a refractive index matching the layer in which the spring is embedded to this end.

CHOSEN-DRAWING: Dwg.0/0

TITLE-TERMS: MECHANICAL REINFORCED JACKET OPTICAL FIBRE EMBED WIRE SHEATH END EMIT FIBRE

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